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SCIENTIFIC PARADIGMS AND RELIGIOUS WORLD VIEWS

by

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "Scientific Paradigms and Religious World Views" submitted by Robert Alan Russell in partial fulfilment of the requirements for the degree of Master of Arts.

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ABSTRACT

The thesis concerns some of the problems associated with the justification of religious assertions. The first chapter attempts to show that religious language cannot be reduced to either moral statements or the mere expression of an attitude to the world. To deny that religious discourse is used to make what are considered to be factual claims, one must distort, or at least ignore a large part of it. Following this, we examine the problem of justifying the truth claims of religious assertions. Little progress has been made in the arguments between those who accept and those who reject the truth of religious assertions and it is suggested that, in many cases, this is because the opponents fail to share the same presuppositions necessary for the argument of either to be conclusive. It is argued that, in common with all empirical claims, the assertions of religion depend for their significance on the acceptance of a number of "absolute presuppositions" or "categorial principles" as defined by W.H. Walsh. These are not open to justification in the manner appropriate to normal assertions, but, rather, they themselves form the basis and the framework within which any such justification can take place.

In order to demonstrate that religious assertions are not alone in being dependent on absolute presuppositions, the second chapter examines some of the issues raised for

the Philosophy of Science by T.S. Kuhn, especially in his book, The Structure of Scientific Revolutions. It is argued that what he speaks of as "scientific paradigms" involve the same issues which Walsh raises when he speaks of "categorial principles".

The question now arises as to whether or not there can ever be any meaningful discussion between those who hold to different paradigms or sets of absolute presuppositions, or whether such a disagreement is necessarily marked by an insuperable degree of misunderstanding. In the remainder of the thesis it is argued that there are ways in which one can proceed from what is held in common with an opponent, to a degree of understanding which is sufficient for a meaningful degree of comparisons with one's own position. From this it is suggested that the dispute between the religious believer and the non-believer need not be hampered by their failure to understand each other's position but that each can grasp and appreciate the opposing point of view without necessarily having to adopt it as his own in order to do so.

TABLE OF CONTENTS

	Page
CHAPTER 1	1
CHAPTER 2	25
CHAPTER 3	46
CHAPTER 4	65
BIBLIOGRAPHY	84

CHAPTER 1

In this chapter I would like to argue, briefly, as follows: Although it has been shown that the language of Christian Theism involves the expression of attitudes which the believer holds towards the world and the moral convictions which he accepts, it also contains a number of assertions about God, and about the world, which the believer holds to be true. It is these assertions which form the Christian's justification of his attitudes towards the world and the ethical principles included in Christian belief and it seems to me that the majority of thoughtful believers hold that they have good reason for thinking that they are true. Following this, I would like to examine the difficulties involved in arguing for these assertions with those who are not prepared to believe them.

First of all, then, we must give some attention to those views which see the statements of Christianity as being empty of any assertive content. Some philosophers have argued[1] that the language of Christian belief is in no way concerned with making any kind of factual claim either about the world or the supernatural. This kind of theory has resulted from the conviction that, unlike the assertions of science and of everyday life, those statements of Christian belief which appear to have a factual content, are

immune to the kind of tests for truth or falsity which seem to be applicable to all normal factual claims. It appears to be an obvious and straightforward principle that to assert P to be the case is equivalent to denying that P is not the case.[2] It follows from this that if someone makes a factual statement he is, at the same time designating a certain state of affairs as being incompatible with its truth. If he is unable to show us what such a state of affairs would be, to inform us of those circumstances which would be incompatible with his assertion, then it is difficult to accept that a factual statement has been made at all. "And if there is nothing which a putative assertion denies then there is nothing which it asserts either: and so it is not really an assertion."[3]

Are there any circumstances which would falsify what we regard as the assertions of Christianity, in this way? Some philosophers consider that if any of the statements of Christian belief are interpreted as fact - stating, there is no state of affairs which could be shown as incompatible with their truth and, at best, it would be unclear what the meaning of the statements happened to be.[4] Where this view is accepted, the significance of the putative assertions of Christianity is found in reducing them to the statement of moral principles and the illustration of these principles. R.B. Braithwaite, for example, suggests that "A religious assertion, for me, is the assertion of an intention to carry out a certain behaviour policy, subsumable under a suffici-

ently general principle to be a moral one, together with the implicit or explicit statement, but not the assertion of certain stories."[5]

The thesis of the reduction of religious language to that of expressing a moral position is unsatisfactory for the following reason. It would appear that the believer can have no justification for the moral attitudes which he adopts and that, in particular, this interpretation of the Christian position could have no rational basis as a belief which is held. However, believers evidently think that they have some rational grounds for believing as they do and that the moral attitudes which they have follow from what they hold to be true about God and about His actions in the world. If the beliefs which are said to back up the moral position can be shown to be meaningless in the sense that there is no justification for accepting them, i.e., that they neither follow from evidence, nor is there any state of affairs which they rule out as not being the case, then the moral principles which were thought to follow from them stand in need of a new set of justifications. If philosophers, such as Braithwaite, want to argue that there is no means whereby theological discourse can be treated as the making of meaningful assertions, then they would also want to argue that the believer, as a rational person, must accept that this is so. This means that the believer must be prepared to admit that the system of belief on which he based his morality is illusory. Thus, his reasons for

retaining Christian morality must now be non-Christian and as a result, any resemblance between the moral position which he held while still convinced of the assertions of Christian doctrine and that which he holds now that he is convinced of its meaninglessness, must be purely fortuitous. The rationale behind the adoption of each set of moral beliefs is completely different and just because they happen to coincide, does not make it any the less artificial to call them both "Christian".

D.Z. Phillips takes the view that it is a mistake to apply the criterion of falsifiability to the statements of Christianity. The meaning of religious statements is not dependent on the application of some external test but the "criteria of meaning in religion must be intrinsic to religion itself." In "Religious Beliefs and Language Games"[6] Phillips is concerned to demonstrate the viability of this view. At the same time, he wants to show that if the meaning of religious statements is only to be found within the reference of religious discourse this does not entail that religious beliefs are "self-contained esoteric games."

Phillips thinks that religious beliefs have what he describes as an "absolute character" and he argues for this in two ways. First, he examines the question of the importance of religious beliefs, why believers feel that one ought to hold them. Many people argue that it must be shown to be reasonable to believe, but Phillips claims that it is difficult to understand what is involved in this. The problem

is that it is not clear as to the grounds on which religious belief should be considered as important. In demonstrating this, Phillips applies the distinction, made by Wittgenstein, between absolute judgments of value and relative judgments of value. If we accept the importance of religious beliefs through a "relative judgment of value" we "believe in God because he is the most powerful being" or "because only those who believe flourish in the end," etc. In other words, religious beliefs are seen as means for some further end or purpose and "the end is all important, the means relatively unimportant."[7]

For Phillips, however, the characterization of religious beliefs as means to ends is not an acceptable account of their significance for many believers. "They would say that God's divinity cannot be justified by external considerations. If we see nothing in it, there is nothing apart from it which will somehow establish its point."[8] Instead, he argues that the importance of religious beliefs rests on an absolute judgment of value. When we evaluate something according to a relative value judgment we are referring to its adequacy in fulfilling certain purposes, or its importance as a means towards an end. Thus the same thing could be valued highly or regarded as a nuisance, according to the ends of the person making the evaluation. It follows from this that if we know his purposes, we can give a man reasons for taking a certain course of action. But "we cannot give a man reasons why he should be good." Moral judg-

ments of value are absolute in that there are no reasons for their acceptance which refer to considerations external to them. One either sees the point of an absolute value judgment or one does not. In the same way, the value of religious beliefs is not to be justified by external reasons. "If a man urges someone to come to God and he asks "What if I don't?" what more is there to say?"[9] There is no way in which we can make him acknowledge his obligations. If we could convince him to believe from prudential motives, "he would not be believing in God. He would be believing in the best thing for himself."[10]

Thus, religious values are absolute and in the sense that they contain their own justifications, Phillips argues further that it is only this absolute character of religious beliefs which will account for the distinction between other worldliness, "a distinction which is important in most religions."[11] There is a tension between the world's ways of regarding matters and religious reactions to them. For example, victory in the eyes of the world is determined by the course of events and whether or not God is victorious depends on what events take place. But this is not so for the believer; instead it is faith in God which determines what is regarded as victory. The absolute values involved in religious belief determine what is important according to their own criteria and so what often seems like defeat according to the relative values of the world is victory according to the absolute values of Christian belief.

Secondly, Phillips maintains that religious beliefs are not subject to the same criteria of rationality as non-religious beliefs. Two people, one of whom says there is a God and the other who says he does not believe in God are not disagreeing in the way they might over the existence of unicorns. In fact, they are not contradicting each other since "the reality of God cannot be assessed by a common measure which also applies to things other than God."

His argument is that it is a mistake to subject religious discourse to the same criteria of intelligibility as the non-religious ways of speaking whith which we are familiar. To do so is to attribute what is only a relative reality to beliefs about God. Religious beliefs would only be hypotheses relative to the criteria by which they were assessed. But to regard religious belief in this way is to ignore the peculiar meanings of religious discourse and the result is that its differences from familiar non-religious ways of speaking are deviations and distortions from the normal. Phillips suggests that religious beliefs should be regarded as absolute in the same way as religious values. Thus, they are not testable hypotheses, but the difference between a man who does and a man who does not believe in God is like the difference between a man and a man who does not believe in a picture.[12] But what does belief in a picture amount to? It plays the role of regulating a person's life. "Believing in the picture means, for example, putting one's trust in it, sacrificing for it, letting it regulate one's

life, and so on." Thus religious beliefs are absolute in the sense that they determine the attitude which a person has to life, the value system which he accepts, the way in which he interprets events.

It is apparent, however, that this plainly will not do. If Phillips' account saves the religious believer from some difficulties with the meaning of his discourse it commits him to a position which would be unacceptable as far as traditional religious belief is concerned. If religious beliefs have a purely regulative function this means that they can never be assertions stating that something was, is, or will be the case. If all religious beliefs are absolute, this entails that their role is restricted to creating the attitude which a person has towards his other non-religious beliefs. Rather than asserting what is the case a man's religious beliefs must be restricted to how he thinks and behaves towards the non-religious, factual side of his experience.

It would appear that Phillips is committed to the view that, as absolute beliefs, religious beliefs have no more content than their function of creating certain attitudes towards the world. Since they do not assert anything it is difficult to perceive how the concepts of truth or falsity could be applied to them. Traditionally, believers have incorporated in their religion certain historical statements which they have considered to be true and it has been thought by many that certain eschatological statements refer to

events which will actually take place. Phillips' theory seems to rule out this possibility because absolute theological beliefs are not incompatible with any state of affairs in the world. Religious beliefs do not follow from any such state of affairs but rather the beliefs themselves determine the significance and meaning of those events which are related to them.

Now, the assertive meaning of a statement depends on knowing what it would be for it to be true and what it would be for it to be false. As Renford Bambrough points out:[13] "Meaning is not identical with verification, but meaning involves verification," if questions of the truth and falsity of statements are to arise. "To understand a statement is to have some idea of what would have to be the case for that statement to be true and therefore to have some idea of what steps must be taken to find out whether it is true." As far as Phillips' absolute beliefs are concerned, there seems to be no means whereby these conditions might be met. He wants to argue that everything which can be said about the crucial beliefs of Christianity is exhausted in an account of their classification or selection of the facts according to their own criteria of the regulative influence it has on how a person lives his life. Thus, he says[14] "Recognition of a belief... does not involve the weighing of evidence or reasoning to a conclusion. What it does involve is seeing how the belief regulates a person's life." Two people who disagree about religious belief do not contradict each other

because, on Phillips' Wittgensteinian view they cannot be compared with those who disagree over belief in a hypothesis. Rather, Phillips wants to use Wittgenstein's notion of "believing in a picture" in order to illustrate the nature of religious belief. But the disagreement between the believer and the unbeliever now becomes a case where "believing in the picture, means for example, putting one's trust in it, sacrificing for it, letting it regulate one's life, and so on. Not believing in the picture means that the picture plays no part in one's thinking." The disagreement then, consists not in contradictory assertions but in the possession of different life styles. Thus, it would seem, the statements of Christian belief are not assertions as to what is the case.

It seems to me that Phillips has come very close to the position of philosophers like Braithwaite in that his version of Christianity appears to reduce one to the adoption of one manner of life rather than another and it is not so very far from the representation of a religious assertion as "the assertion of an intention to carry out a certain behaviour policy, subsumable under a sufficiently general principle to be a moral one, together with the implicit or explicit statement but not the assertion, of certain stories."[15] As far as I can see, such a thesis does not represent the manner in which traditional users of theological statements have construed them.

We need, however, to answer the charge of Phillips,

and of Wittgenstein, that it is necessary to adopt the view which they present in order to escape giving Christianity an interpretation which is superstitious or immoral according to its own ethical standards. But, as Ninian Smart argues,[16] "it surely cannot be held that the presence of literal empirical beliefs makes a religion superstitious." Phillips seems to argue that the extent to which religious belief depends on empirical claims is the extent to which it is treated as a means to non-religious ends. However, this need not be the case. We could hold that the presence of empirical facts counts as an evidential basis for Christianity without at the same time following its ethical precepts from purely prudential motives. Just because a person believes, does not mean that his religious beliefs are barred from having what Phillips calls an "absolute character". One could hold, for instance, that if there is a God, with certain characteristics, then he would, by reason of his nature alone, be worthy of worship and obedience, but this would not rule out a search for empirical evidence as to whether or not such a being actually does exist. Again, as Smart argues[17] there is a sense in which the doctrine of the Last Judgment, for example, is a belief which regulates the way in which one lives one's life, but this does not prevent it from being something more than this or from having an empirical or factual content.

It seems to me, therefore, that Christian belief cannot be represented as the holding of principles which regulate a

person's life and nothing more than that. It is evident that they contain an important factual element in that they assert that certain events have happened or will happen and that these events are of the same kind as those which are dealt with by history or the sciences. Since I do not agree that the justification of the assertions of religious belief from empirical grounds can be ruled out for moral reasons, it would seem, that to the extent which Christianity makes factual claims these claims must be open to some criteria of verification or falsification, just as in the case of any other factual claim. As far as I can see, this amounts to little more than the requirement that one should be able to justify an assertion in order to be entitled to make it.

It might appear now, that there is nothing further to be done than to assess the reasons with which Christian believers back up their case and pronounce judgment as to whether or not their claims can be substantiated and whether or not they can be rationally made. Unfortunately, this is not quite so simple as it may seem.

There seems to be no clear-cut decision procedure whereby what purports to be evidence for Christian belief might be judged. As Basil Mitchell puts it,[18] differences of opinion between (believers and non-believers) are not easily settled by straight-forward appeal to evidence, because one of the points at issue is precisely how the evidence is to be taken." That the disagreement between the believer and the non-believer does not seem to be soluble by a simple appeal to

the facts is obvious, for if it were possible to settle religious questions in the same way that we are able to decide whether or not there is life on the moon, the disputes of religion would have been settled long ago. Nevertheless, the factual claims of Christianity often are, and have been, supported on what believers have held to be straight-forward factual grounds. At the same time, however, there are those who claim that the evidence which the believers bring forward has no compulsion for them, that it is insufficient to convince them of the truth of Christianity or even of its probability.

Mitchell[19] notes two kinds of reasons for which a person might be an atheist. The first is the case where he claims that there is insufficient evidence for belief but at the same time where he is in agreement with the believer as to what such evidence would be. The second is the case of "the atheist who declares himself unable to attach meaning to theistic assertions on the ground that he cannot conceive of any observations as tending to count for or against theism." In a dispute of the first kind there is some hope of resolution in such activities as research into the New Testament documents or general investigation as to whether or not the events which the believer refers to in support of his position actually did occur. There is agreement that if certain events can be shown to have taken place or are happening now, then this would be sufficient to establish the truth of certain claims about God and about the transcen-

dent in general. Thus, it is conceivable that circumstances might arise which would render one or other of the parties completely victorious. The major disagreement between such parties would seem to consist of whether or not the conditions which they see as being sufficient for the truth of theistic assertions have in fact been met.

In the second case, where the atheist can conceive of no observations whatever which would count for or against theism, it is much more difficult to give a clear account of the differences between the believer and the non-believer. This is not just a case of disagreement as to whether the conditions which count as sufficient evidence are fulfilled, but there is a further difference in that one part is not prepared to admit any kind of observations whatever as evidence. R.W. Hepburn[20] points out that the Christian must be able to make some sense of the "cosmological relation" in order for him to move from assertions about things in the world to assertions about God and the Transcendent. As he says,[21] the Cosmological Argument "is an indispensable part of any Christian apologetics whatever, including those that centre on revelation." Since the presentation of the Cosmological relation between the world and God can be shown to be invalid in either a logical or causal form it must be the case that the dependence of the world on God "must be some sort of factual dependence."[22] Hepburn tries to find an exemplification of this in Otto's account of religious experience but he concludes that the results are, at best, ambiva-

lent. It would seem therefore, that it cannot be clearly established as to when the inference from events in the world to facts about God can be legitimately made and that there can never be any logical compulsion for anyone to make it in any circumstances whatever. On the other hand, there are other people who, given the appropriate circumstances, are quite willing to say that these are a sufficient condition for the truth of certain assertions about God.

What then, is the nature of the disagreement between the believer who holds to the validity of the inference from the truth of assertions about the world to the truth of assertions about God, and the non-believer who holds that there can be no such relation between earthly events and the transcendent? It is difficult to see how such a dispute could be resolved on the basis of logical or factual discussion. It is not clear what the circumstances would be under which the view of either of the parties could either be verified or falsified. It appears to me that the nature of such a disagreement concerns what W.H. Walsh, in his Metaphysics,[23] would refer to as "absolute propositions" or as "categorial principles". Walsh argues that the traditional division of significant propositions exclusively into relation of ideas and matters of fact fails to account for other propositions which fall into neither category. What we can significantly assert seems to be governed, in addition to the laws of logic and the truths of empirical fact, by principles which cannot be classified as either of these. Although there is no con-

tradiction in denying, e.g., that nothing happens except for a reason, or that things never vanish without trace and although such statements cannot be verified factually, they are, nevertheless, accepted as being true without question. When we are dealing with practical problems as to why some object has been lost, it just does not occur to us to question principles such as those above. They determine the kind of inquiries that we make and what we consider to be the facts because these categorial principles are an underlying framework of the facts. They are not empirical statements but rather they are the presuppositions of empirical statements and provide a scaffolding or constitute a pre-existing mould inside which we build up or present our empirical knowledge. Most statements have presuppositoins which can be questioned but we reach the stage where such questioning cannot be carried any further. It is these presuppositions which become "absolute presuppositions" or "categorial principles".

For Walsh, these categorial principles are fundamental components of metaphysical systems and among such systems he numbers materialism. The materialist extends the principle that nothing occurs which cannot be accounted for in natural terms from its restricted application in science to cover questions of any sort, including those of morals and religion. From serving as an absolute presupposition covering the restricted set of questions asked by scientists, this principle becomes an absolute presupposition covering any question

whatever. Thus, the materialist is not willing to allow talk of miracles or of the grace of God to make any serious sense. On the other hand, as we have seen, the theist is not prepared to accept such a presupposition. He believes that there are events which have occurred, or could occur which would not in principle, be explicable in natural terms, but rather demand an explanation in terms of the transcendent.

It would seem that the acceptance of the truth of either materialism or theism depends on the acceptance of the categorial principles which underlie each of them and, to that extent, they may be described as metaphysical systems as Walsh defines them. Thus, the major difference between the two views will lie in the presuppositions which regulate each of the different belief systems, and, in the final analysis, discussion between the two parties must involve the discussion of the differing absolute presuppositions.

It might appear from this that we are approaching the position held by Phillips in that the non-believer and the believer seem to be in the position where they fail to understand each other, at least to some extent. Phillips wishes to argue that neither can contradict the other because: "If one man contradicts another, they can be said to share a common understanding, to be playing the same game," but in the case of the dispute between the theist and the atheist, two different games are being played. Thus, he recognizes the degree of incommensurability which exists between the statements of the theist and the non-believer. But, as we

have seen, Phillips seems to want to say more than this, viz. that religious language is not assertive, and that this so partly because of this difference in the games which are being played. However, Phillips draws from this the following conclusions which do not appear to me to be warranted. The first is that, in Walsh's terms, the categorial principles which underlie Christianity are, themselves, strictly religious beliefs. Thus, a Christian believes in the Last Judgment, not because of other beliefs which do not count among those which are specifically religious, but because this, for him, is an absolute belief or presupposition. The second conclusion is that since religious beliefs have this absolute character, then they are not assertive in character but are regulative influences in a person's life.

It may well be the case that certain religious beliefs are categorial principles, but it seems to me that these are often conditional on the acceptance of other beliefs. Thus, one could hold that God must be eternal in the way that Phillips suggests, as an absolute belief, while at the same time, being of the opinion that God does not exist. Or, if it were known that a being existed who had the required qualities, then one could hold, as an absolute presupposition, that he deserves unquestioning obedience. But, it may be possible for a set of theistic categorial principles to be without application because we lack some outside justification for believing in the entity to which they might apply, and, apart from his argument from superstition, which we have

discussed, Phillips gives us no reason why this might not be so. I have suggested before that one of the absolute presuppositions of Christianity might be that an inference can be made from assertions about the world to assertions about God and the conditions under which the move from world to God can be made. Now, it does not seem to me that the categorial principle involved here should be regarded as one of the principles of Christian belief, since it is possible for someone to accept it and at the same time hold that there is not sufficient evidence in the form of assertions about the world for us to conclude the truth of assertions about God. Such a presupposition would be independent of Christianity in that it is not a specifically religious belief but, at the same time the difference between the atheist who does not hold to it and the Christian is going to be different in kind from that between the theist and the atheist who, in spite of their disagreement, share the same categorial principles.

The second conclusion which Phillips seems to draw is that religious language is not assertive. It might be thought that this follows from the nature of the disagreement between two people who are not playing exactly the same language game, for, Phillips argues, such people do not contradict each other. From this, he concludes that religious beliefs cannot be assertions and: "To construe these beliefs as hypothesis which may or may not be true is to falsify their character." There are two points which I would like to make

in answer to this. First of all, it seems to me that we need not conclude the impossibility of two people ever contradicting each other when what they say is based on different sets of absolute beliefs. We could, conceivably, say that one man asserts, and the other denies, the existence of certain entities and that they genuinely contradict each other even though they do not work from the same presuppositions. In a case such as this, however, there is bound to be a difference in the criteria of evidence and argument between the two and it is here that the incommensurability between the two positions would lie. Although each person might understand, perfectly, the significance of the conclusion which the other reaches, the process of reasoning used will be at least partly meaningless to him. This is not to say, however, that, when two people are working from different categorial principles, the negation by one man, of a statement made by the other, must always amount to a contradiction. What we have shown is that contradiction is not an impossible occurrence.

Secondly, as both Phillips and Walsh seem to agree, absolute beliefs, or presuppositions, act as rules, or supply the criteria, according to which, what counts as evidence, as meaningful questions etc. are decided. Since they play this regulative role, it may be suggested that categorial principles cannot be thought of as assertions in that they have a part in determining what a proper assertion should be. It seems to me, however, that not all theistic beliefs

are absolute in this sense, as I have argued above. Some of them depend on more general presuppositions which are not specifically religious beliefs. The question now arises as to the logical status of those statements which depend for their meaning on the acceptance of certain categorial principles. Are they assertive? This is a question to which I hope to return later but perhaps the following points, made by Walsh, give us some reason to think that they are. He argues[24] that statements which depend for their validity on the acceptance of a set of categorial principles are, nevertheless, assertions. A metaphysician who builds his system on such principles has "to display liberal examples of the treatment he recommends, a process which involves him in much detailed description and interpretation. Much Metaphysical theory consists in the adducing of facts to support or refute a theory" and "a system of metaphysics which cannot round facts which are at first sight awkward for its pretentions is like a system of law which cannot be applied."

I think that we are now in a position to give an account of religious beliefs which will enable us to proceed on the basis that many theists feel that they can justify what they believe on grounds which are not exclusively religious and that they are rationally entitled to think in this way. I have agreed with Phillips that the beliefs of Christianity depend for their significance on the acceptance of absolute presuppositions but I have argued that it is false to say that all religious beliefs are absolute and

that at least some depend on other, absolute beliefs of a more general application.

It seems to me that the following questions arise from this. The first concerns the nature of the statements of the theistic belief as they relate to underlying absolute presuppositions. To what extent can they be said to be assertive in that their truth or falsity depends solely on conditions in the world? The second concerns rational discussion between those who differ as to their absolute beliefs. What standards of correctness apply here and how can it be shown that one absolute belief is preferable to another? I would now like to show that the same problems appear in the philosophy of science and that an investigation of how they are to be resolved will shed a good deal of light on their occurrence in the philosophy of religion.

FOOTNOTES

[1] E.g., R.M. Hare, R.B. Braithwaite and T.R. Miles.

[2] Anthony Flew, "Theology and Falsification", The Philosophy of Religion, ed., Basic Mitchell, Oxford University Press, 1971.

[3] Ibid., p. 15.

[4] Ibid., p. 14.

[5] "An Empiricist's View of the Nature of Religious Belief", in Mitchell, p. 89.

[6] Mitchell, p. 121.

[7] Ibid., p. 124.

[8] Ibid., p. 124.

[9] Ibid., p. 124.

[10] Ibid., p. 124.

[11] Ibid., p. 129.

[12] R. Bambrough, Reason Truth and God, Methuen, 1969, p. 48.

[13] "Religious Beliefs and Language Games", p. 129.

[14] Mitchell, p. 89.

[15] Philosophers and Religious Truth, p. 198.

[16] Ibid., p. 202.

[17] Ibid., p. 8.

[18] Ibid., p. 10.

[19] "From World to God", in Mitchell.

[20] Ibid., p. 171.

[21] Ibid., p. 172.

[22] Ibid., p. 9.

[23] Metaphysics, Hutchinson, 1963.

[24] Ibid., p. 164.

CHAPTER 2

In this chapter, I would like to show that the problems connected with absolute presuppositions in the philosophy of religion are also part of a wider range of problems of the same type. This being the case, the question of rational choice between the absolute beliefs which separate the believer from the atheist and the difficulties concerning the assertive form of statements which depend on certain absolute presuppositions for their significance can both be considered within a wider context than that of the philosophy of religion.

To begin with, I would like to discuss the major issues which T.S. Kuhn presents in his Structure of Scientific Revolutions[1] and other related writings, in the light of what has been said in the last chapter. Kuhn argues that the conception of science as the simple accumulation of facts is neither a true account of the actual progress of science, not a plausible description of the ideal method by which scientific advance should take place. The historical argument with which the first of these contentions is established need not concern us here, but what he attempts to show is that in its actual progress, the scientific enterprise has not been simply cumulative. Rather, it has been punctuated by upheavals and conceptual changes which Kuhn refers to as "scientific revolutions". Developments have

taken place by the supplanting of formerly accepted theories and recognized achievements by new ones which are incompatible with the old. The practice of science is normally based on the acceptance of what Kuhn refers to as "paradigms".[2] A paradigm consists of one or more scientific achievements which are acknowledged by a particular scientific community, for a time, as supplying the foundation for its further practice. Those who base their research on such a paradigm, are engaged in what Kuhn describes as "normal science". For normal science to be possible, the achievements embodied in the appropriate paradigm must be sufficiently unprecedented to attract an adhering group away from competing modes of scientific activity, and sufficiently open ended to leave all sorts of problems for its members to solve. A scientific revolution consists of the rejection of what was accepted as the paradigm up to that time and the adoption of some other set of theories and achievements. What is practiced in the intervening period is referred to by Kuhn as "extraordinary science" a period when there is dispute as to which of a number of conflicting paradigms should be accepted.

There are certain difficulties in the notion of a paradigm as it occurs in the main body of Kuhn's book,[3] but I do not propose to discuss them here. In recognizing these difficulties, Kuhn acknowledges that he has used the term in two different senses:

> On the one hand, it stands for the entire constellation of beliefs, values, techniques, and so on shared by the members of a given community. On the other, it

> denotes one sort of element in that constellation, the concrete puzzle-solutions which, employed as models or examples, can replace explicit rules as a basis for the solution of the remaining puzzles of normal science.[4]

The first sense of paradigm I take to be equivalent to the conceptual scheme through which the work of a given scientific community takes place. The second concerns the means whereby the individual scientist becomes and remains a member of a community and how each individual member recognizes and works within a given scientific tradition.

What is involved in the acceptance of a paradigm? In accepting it, the scientist has committed himself to a certain view as to the population of the universe and the behaviour of that population. He has accepted a certain ontology and assumptions as to what is possible within it. The paradigm is also the source of methods, problem fields and standards of solution accepted by any mature scientific community at any given time. Thus, when a paradigm change has occurred, this has involved the acceptance of a different ontology and/or a difference in the list of methods, problem fields and standards of solution which are considered legitimate or appropriate. For this reason, Kuhn detects a large element of incommensurability between statements based on the old paradigm and those of their successors. Those scientists who failed to make the transition to the new paradigm and those who accepted the new position, experienced difficulties in their discussions with each other because of a partial failure to understand each others' position. They

disagreed as to what counts as a problem and what counts as a solution according to their acceptance of the different paradigms, and to some extent, they talked through each other when debating the merits of their respective positions.

The assumptions embodied in the acceptance of a paradigm can not be presented as part of a list of beliefs to which the scientist holds but, rather, they are responsible for determining the thinking which makes it possible for the scientist to hold just those opinions. Thus, where there is disagreement over the acceptance of paradigms, the parties concerned must argue for their case in a manner which is partly circular. The difference between them is on so basic a level that, on certain issues, they have not a common method of rational argument by which to resolve their disagreement but they must base their justifications on the very assumptions which are responsible for their differences. The dispute between those who hold to different paradigms is based on the fact that they have different conceptions of the ontology of the universe and what is to count as legitimate procedure in science. Forming a part of that procedure are the criteria governing what are to count as acceptable methods of discussion between opposing factions, and since these will often differ between paradigms, there will be an extent to which the assertions of a man who accepts one paradigm will be either meaningless or a subject of misunderstanding for one who holds to another.

Historically, then, Kuhn claims, the disagreement

between those who have held to different, consecutive, scientific paradigms, has included this element of incommensurability between their view, and this is demonstrated by the fact that normal scientific argument and discussion become only partially relevant. The choice between the two paradigms cannot be made on the basis of ordinary scientific research, but if two scientists fail to realize that they do not accept the same paradigm, they will have a frustrating time in attempting to push their own opinions.

Kuhn's account suggests that the practice of science involves the acceptance of something which is close to being a metaphysical system as defined by W.H. Walsh. If the difference between scientists, who disagree in the paradigms which they accept, principally consists of their failure to share a common ontology and to recognize a common methodology, then such a disagreement must be very similar in kind to the case where two people fail to share absolute presuppositions. Furthermore, to accept a paradigm, would be to assent to one set of absolute presuppositions rather than another, at least to some extent, in the same way that this obtains for metaphysical systems. Thus Kuhn remarks "that Newton's second law of motion, though it took centuries of difficult factual and theoretical research to achieve, behaves for those committed to Newton's theory very much like a purely logical statement that no amount of observation could refute."[5] Such a statement, however, would not be true for purely logical reasons. The Newtonian would accept it without question

because, for him, it would have become an absolute presupposition and although it might behave as a logical statement, as far as the relevance of factual discovery is concerned, it is accepted as true for a totally different reason, i.e., because it is an absolute presupposition.

So far, it would appear, that the same difficulties which arise in disputes over the merits of rival metaphysical systems have also appeared in discussions between those who differ in their acceptance of scientific paradigms. The real cause of the disagreement stems, in both cases, from the difference in presuppositions or the unquestioned assumptions which each party holds, and so, in each case, the kind of procedure used for solving disputes between those who work within the same metaphysical system of normal scientific tradition is itself in dispute. However, need this difficulty arise in science? Might it not be the case that in an ideal situation there would be no necessity for scientific work to be governed by a paradigm at all? Could science not arrive at an objective account of the world which does not require a paradigm for its acceptance?

Kuhn does not think that it is possible to conduct scientific enquiry outside the context of a paradigm, for this must presuppose the possibility of our access to a set of fixed and neutral observations. He rejects the notion that what changes with a paradigm is merely the scientists' interpretation of observations which are themselves fixed once and for all by the nature of the environment and of the

perceptual apparatus. Interpretation does not seem to be an optional extra to an experience of stable and neutral data. Kuhn considers that the theory of our access to neutral data is itself, close to being a paradigm and since this is the case, there is no straight-forward way of showing that another view is to be preferred to it. Nevertheless, it seems to me that his reasons for rejecting this position are conceptual and therefore logically compelling.

To a large extent, the data which we experience are governed by the paradigms to which we hold. This is not to say that what we experience is not a result of stimuli which originate outside ourselves but that these stimuli are selected and rejected, noted or ignored and arranged in order of priority according to the dictates of the paradigm to which a scientist holds. It is these data, as defined by paradigms, which are the object of our observations, for they, alone, are available to be observed. Kuhn is thus arguing that the stimulation of our sense organs is not sufficient to account for the contents of our perceptual experience, because we can perceive only what we are taught or what our conceptual systems allow us to see.

In order for us to accept that we have access to a neutral, immediate experience of the world, independent of the imposition of any conceptual scheme, Kuhn argues that we must be able to have a language in order to analyze such experience.[6] It does not seem that such a language is possible. There has been no success in the attempts to construct

one and Kuhn considers that any such effort is hopeless. The possibility of a netural observation language seems to depend on a theory of perception and a theory of the mind which allows for awareness of all stimulation of the sense organs. But, as a matter of fact, there is a selective process which determines those stimuli which are noted by the brain and those which are not. Thus, on a purely physiological level, without assuming the truth of any theory of the mind, there is reason for saying that only some of the stimulations of the sense organs are made available for observation. On the other hand, psychological experiments with gestalt figures would suggest that the mind selects the information which is presented to it in one way rather than another. Thus, from the same information, e.g., a series of lines on a piece of paper, one man may observe a drawing of a duck and another that of a rabbit. In many cases, by isolation of some feature and the suggestion that he think of it in a different way, or by some similar method, a person may be induced to change his principle of selection so that he can switch from seeing the drawing of the duck to seeing that of the rabbit, or vice versa. It is evident that there is more to this phenomenon than the observation of neutral data, but that what goes to make up the object which is observed is the result of some principle of selection applied by the perceiver.

Kuhn also argues that the search for a neutral observation language must begin from the existing languages, which,

far from being neutral, refer to objects which are determined by paradigms and which are not identical with the required raw experience of the world. To precede such a language, the attempt is made to eliminate all non-logical and non-perceptual terms but even so, such a language still presupposes a host of expectations about nature, which have been taken from ordinary language, and if these expectations are violated, the language ceases to work. Kuhn does not know what it would be like to have language without any such expectations nor does he think that any such account is forthcoming.

If we have no access to the required immediate experience, then it must be the case that all our observations concern objects which exist merely in virtue of the paradigm which is accepted. The paradigm determines those objects which are available to be the immediate objects of awareness. Thus, the contents of our experience are not simply the stimuli which we receive but rather, we see them in terms of objects which have their existence according to the paradigm which is adopted. Kuhn thinks that scientists are right when they treat items such as oxygen, pendulums or planets as the contents of their immediate experience. The only alternative to the objects seen at any particular time is not the perception of some neutral fixed data but vision through another paradigm.

It is apparent that much of W.H. Walsh has to say about absolute presuppositions is involved in this. Categorial

principles form the framework for empirical statements. They are not to be numbered among factual statements but they are the presuppositions of factual statements and as such they are not open to the same kind of justification. Categorial principles serve as the underlying rules which govern the making of factual assertions in that they are applied to experience in order that we can interpret and explain it. The way in which we investigate factual questions, those forms of inquiry which are considered to be legitimate, the ontology which we recognize, all embody and presuppose certain absolute presuppositions and once again Walsh seems to be making the same point as does Kuhn in his portrayal of scientific paradigms. However, is it possible to give an account of the world without a commitment to any absolute presuppositions? If Kuhn's arguments against the impossibility of a neutral observation language are valid, then they also apply to the question of a description of the world which is free from absolute presuppositions. Insofar as they determine what the immediate objects of our experience are to be, scientific paradigms include the rules in accordance with which the stimuli which we receive from the world are organized to be seen as the objects of our immediate awareness. As rules which control the way in which we see the world, these aspects of a paradigm must be identical with categorial principles as Walsh defines them. Thus, an account of the world which does not involve absolute presuppositions must also be one which is independent of a para-

digm. To have either of these, therefore, it must be possible for us to have access to a system of observation, the objects of which are determined by sensory experience alone.

Having shown that the possibility of neutral observation is necessary for a meaningful account of experience which is independent of either paradigms or categorial principles, I would like, briefly, to cite the reasons which strongly suggest that its analysis in terms of a language is not possible. The first is that which Kuhn has presented and which has been outlined above. This is also used by Mary Hesse in her "Duhem, Quine and a New Empiricism"[7] where she refers to Duhem's distinction between practical facts and theoretical facts. What is primarily significant for science is not the precise nature of what we directly observe but rather the interpretive expression which we give to this. Practical facts are what we directly observe while theoretical facts are the interpretive expression of these. Hesse argues that a linguistic expression of practical facts will not serve as a basis for science. "They are inprecise, ambiguous, corrigible, and on their own ultimately meaningless." They have no organization which is intrinsic to themselves but rather, their relative significance is imposed on them from outside. In addition to this, "there is a sense in which they are literally inexpressible" because, "as soon as we begin to try to capture a practical fact in language, we are committed to some theoretical interpretation." I think that this is compelling and that it is impossible to

have a language which is composed of practical facts. Standards of comparison, description and recognition which are necessary for the existence of the language are not to be derived from the "raw data" presented by practical facts.

The second argument is that it is meaningless to speak of an observation language which is a neutral description of states of affairs. Our awareness of practical facts is not of things in the world but of the stimulation of our sense organs. The move from awareness of stimuli to the observation of things in the world is made possible by principles which are extrinsic to the stimuli. Thus, statements "whose meaning as descriptions of states of affairs is supposed to be transparent, and whose truth-value is supposed to be individually decidable by setting up the appropriate observation situations,"[8] cannot be meaningfully conceived of. If the neutral data which we experience is of the stimulation of our sense organs and a neutral observation language is one which refers to the world, then we need to be able to transform what is the case as far as the stimulation of our sense organs is concerned into what is the case as regards the world. It would seem, however, that there is no way in which such a transformation can be meaningfully accomplished and thus, no meaningful notion of a transparent observation language.[9]

So far, then, we see that any account of the world must include rules which are presupposed by that account and which determine rather than fall under the justifications

which are made by those who accept it. Kuhn's notion of a paradigm and Walsh's notion of a categorial principle would both seem to include or consist of such rules and assumptions. But, as an account of Kuhn's position this would be too simple. Although the effect of a paradigm on a scientific tradition is similar to the part which would be played by a set of explicit rules and assumptions in that it determines legitimate scientific method, etc., Kuhn wishes to argue that the determination of a paradigm acts at an even deeper level than this. It is to Kuhn's discussion of this view and its ramifications that we will now turn.

Kuhn considers that it is fairly easy to find the established paradigms of a mature scientific community but when it comes to expressing them as sets of rules, the enterprise becomes much more difficult. The search for a body of rules which is competent to constitute a given normal research tradition is bound to result in frustration. The reason for this, Kuhn thinks, is that the scientists who share it agree on the identification of a paradigm without agreeing to or attempting to produce a full interpretation of it. The inspection of a paradigm might be aided by the formulation of rules and assumptions which it is thought to contain, but such an inspection does not depend on the possibility of this formulation. Indeed, the existence of a paradigm does not imply that such rules exist to be formulated.

A paradigm, then, is not reducible to a set of rules and assumptions in the form of statements and this means

that it cannot be set out verbally. We cannot, therefore, discover whether a certain paradigm is accepted by a given group of scientists by looking for a set of statements to which they would all assent. But, if this is so, how can we meaningfully speak of the inspection of paradigms, and how can we account for the identification, by scientists, of those who accept the same paradigms as themselves? Kuhn thinks that this can be accounted for in terms of Wittgenstein's theory of family resemblances. The research problems and techniques which arise within a normal scientific tradition are not bound together by the fact that they satisfy some explicit or even fully discoverable set of rules and assumptions. "Instead, they may relate by resemblance and by modelling to one or another part of the scientific corpus which the community in question recognizes as among its established achievements."[10]

Kuhn gives the following reasons for holding that paradigms are "prior to more binding, and more complete than any set of rules for research that could be unequivocally abstracted from them."[11] The first is the severe difficulty of discovering the rules for scientific procedure which the paradigms are thought to contain. The second is that a scientific education does not include the teaching of concepts, laws and theories in the abstract and by themselves. These are all learned "in a historically and pedagogically prior unit that displays them with and through their applications,"[12] and although the scientist may show his ability to use the con-

cepts, laws and theories which underlie his work, he may be little better than a layman at characterizing the accepted basis of his field. The third reason is that the need for explicit rules and assumptions only appears in periods when there is no accepted paradigm. It is on these occasions alone that scientists debate over legitimate methods, problems and standards of solution, whereas, in the periods when there is an accepted paradigm, such questions never arise. As his final reason for accepting the view that paradigms are prior to formulated rules and assumptions, Kuhn cites the diversified nature of scientific enquiry, which, nonetheless, could be said to subscribe to the same paradigm. Since the existence of explicit rules and assumptions would call for a more monolithic and integrated structure, it would appear that Kuhn's account of paradigms is more satisfactory.

If paradigms operate on this pre-verbal level, then it is clear that the disagreement between scientists who accept different paradigms will be at a more profound level than would be the case if their differences could be set out as a series of statements. In a case where two people differ as to their absolute presuppositions, we have, so far, no reason to suppose that each of them could identify the statements which the other is prepared to accept without question, but Kuhn wants to say that we are not in a position to make any such identification. It is in the light of this that I would like to examine what Kuhn has to say concerning the transition from one paradigm to another and the nature of

the disagreement between those who make the transition and those who do not.

Kuhn argues that there can be no scientific work which is not goverened by a paradigm. This follows from the impossibility of a neutral observation language, for although a paradigm may not be reducible to a set of explicit rules and assumptions, yet it acts in the same way in its governing of the scientific enterprise. A paradigm can only be rejected when there is another one available to take its place, since we cannot have the alternative of no paradigm at all. What account, then, can we give of the change from one paradigm to another? Kuhn suggests that such a transition closely resembles what takes place in a change in visual gestalt, when, for example, a pattern of lines on a piece of paper may appear to us at one time as the drawing of a duck and at another time as the drawing of a rabbit, and we are conscious of experiencing a switch between the two appearances. It is this switch which Kuhn wishes to use in illustration of what takes place in the transition from one paradigm to another, for the other aspects of gestalt change are not appropriate. In science, we do not see something as something else - we have no access to neutral data. But in the case of gestalt phenomena, we do have independent access to the lines on the paper.[13] Also, in a gestalt experiment, we can sometimes, though not always, switch from one appearance to another but, for Kuhn, this does not appear to be the case as far as scientific paradigms are concerned. He disagrees

with Sir Karl Popper's contention that "we can break out of our framework at any time... (into) a better and roomier one... (from which) we can at any moment break out again,"[14] for if this were the case "there ought to be no very special difficulties about stepping into someone else's framework in order to evaluate it." In other words, we are not at liberty to switch from one paradigm to another as we please.

There are two reasons for this. The first is that, unlike the case of the gestalt figure, we have no access to any data which is neutral between all paradigms. In an example such as that of the duck/rabbit, we have the lines on the paper which serve as an external standard against which the switch in vision can be demonstrated but with paradigms we have no such standard, as is shown by the impossibility of neutral observation. Without some neutral means of comparison, the scientist will have difficulty in grasping the nature of another paradigm while at the same time retaining a clear conception of his own. In moving from one paradigm to another there is no indication as to how one may retrace one's steps but to understand and grasp another paradigm is to be converted to it.

The second reason concerns Kuhn's contention that a paradigm exists prior to, and cannot be reduced to, a set of explicit rules and assumptions. This means that the scientist is not in a position to articulate the rules and assumptions which underlie his work and if he can identify the paradigm which he accepts, as opposed to another, this

can only be on a pre-verbal level. But this entails that we have no means of discovering how it is that another paradigm differs from our own for if we are not in a position to formulate it in terms of rules and assumptions, neither is the person with whom we may differ and this means, in effect, that we cannot discuss our differences since we cannot give them any verbal expression. To enter another normal scientific tradition in order to evaluate it, we must be able to inspect the paradigm in question without the aid of formulated rules and assumptions. As we have seen, Kuhn considers that a paradigm governs the scientific enterprise not because it embodies a series of rules and assumptions but because all the parts of the tradition in question are related to each other in terms of a family resemblance and the acceptance of a paradigm entails the ability to recognize the members of a certain family of phenomena which is defined by a network of resemblances between its members rather than some one thing or set of things which those members have in common. To examine another paradigm is to be able to recognize an alternative family relation to that which one already accepts. But we cannot formulate the criteria according to which this recognition on our part takes place; we merely recognize, or fail to recognize the existence of one or another family relation. Now, as we have seen, the contents of our immediate experience are perceived only by virture of our acceptance of a paradigm and to change paradigms is to change these objects. But, this means that the former objects are no

longer part of our present experience and since we have no means of identifying them, we cannot revert to our former way of seeing the world once we have made the change. We have no neutral standard between paradigms with which we can compare them and, at the same time we are unable to formulate them in terms of explicit rules and assumptions.

I think that we are now in a position to discuss the problem of rational disagreement between those who hold to different paradigms, but first, I would like to deal with a difference which has emerged above between the operation of a paradigm and that of a set of categorial principles. In his discussion of the latter, Walsh appears to assume that they can be located and identified as verbal statements within the metaphysical system which a person may hold. Thus, one may identify the absolute presuppositions of another's metaphysical system and agree to the validity of the conclusions drawn from them without being committed to the presuppositions themselves and therefore without accepting the system. In the case of a paradigm, however, Kuhn argues that we do not have such access to another's position while at the same time maintaining our own. We have seen that this follows from two things, the impossibility of a neutral language between paradigms and the preverbal nature of a paradigm's influence. When discussing the relevance of a neutral observation language to competing categorial principles, we say that, insofar as they form the framework for empirical statements, we cannot have a language which is neutral between them. But if this

is the case, then, without a neutral standard of comparison, we will have the same difficulty with their identification as we do with paradigms, and it would seem that it is impossible for us to have access to different metaphysical systems in the way that Walsh suggests.

As things now stand, we may draw the disagreeable conclusion that where men differ as to their metaphysical systems or the scientific traditions which they accept, they are not in a position to identify the issues in which they differ with their opponents. From this it follows that no rational discussion between the two positions can occur. However, this conclusion depends on the assumption (i) that there can be no neutral standard between conflicting paradigms or categorial principles and (ii) that a paradigm cannot be rendered as a set of explicit rules and assumptions. My next chapter will be devoted to an examination of these.

FOOTNOTES

[1] Foundation of the Unity of Science, University of Chicago Press, Second Edition, 1970.

[2] Ibid., p. 10.

[3] See D. Shapers, "The Structure of Scientific Revolutions", Philosophical Review, LXXIII (1964), pp. 383-94.

[4] T.S. Kuhn, Structure of Scientific Revolutions, postscript, p. 175.

[5] Ibid., p. 78.

[6] Ibid., p. 125.

[7] Royal Institute of Philosophy Lectures, Volume 3, MacMillan, 1970.

[8] Ibid., p. 192.

[9] Ibid., Introduction, p. xviii.

[10] Structures of Scientific Revolutions, p. 45.

[11] Ibid., p. 46.

[12] Ibid., p. 46.

[13] Ibid., p. 114.

[14] See Sir Karl Popper, "Normal Science and Its Dangers", and T.S. Kuhn, "Reflections on My Critics", in Criticism and the Growth of Knowledge, ed., Lakatos and Musgrave, Cambridge, 1970.

CHAPTER 3

I think we are now in a position to assume, without further argument, that there can be no observation of the world without the operation of some interpretative scheme which originates from and is applied by the observer himself. We can conclude the impossibility of a neutral observation of the world which is a function of the stimuli which we receive, alone. In the light of this, and the other conclusions of the last chapter, I am concerned to deal with the following two issues. First, I want to show that the impossibility of neutral observation, as above, does not mean that there can be no standard which is neutral between scientific paradigms. The fact that we must see the world through a conceptual scheme, which is applied to the stimuli we receive, is not sufficient to deprive us of a means whereby we can examine different paradigms without committing ourselves to them. Second, I want to deal with Kuhn's claim that paradigms are prior to any verbalization that can be made of them. I shall examine the extent to which this must be true and whether or not this forces us to conclude the impossibility of finding a neutral position between paradigms.

It is conceivable that, sometime in the future, man will meet with a race of equally intelligent beings which originate from elsewhere in the Universe. It seems plausible

to suggest that such an encounter holds the following possibilities. The first is that the aliens will have a totally different conceptual scheme from our own and that this is accompanied by sense organs which respond to entirely different sets of stimuli. In such a case, it may be possible for each race to be aware of the existence of the other, but it is most unlikely that any meaningful contact or co-operation could take place, except on the most primitive of levels.

On the other hand, a large degree of co-operation between the two races might be possible. We can construct the events after the manner of many a science fiction story. The space ship lands, the crew meet with the strange-looking aliens, after some effort they manage to establish a means of communication and some degree of co-operation emerges between the two races. Let us suppose that there is a great difference between the overall conceptual scheme which is held by the aliens and that which is held by the humans. If this were so, there would be a good deal of incommensurability between the different ways in which they viewed the universe. But, to the extent that they communicate and co-operate, the two races must also share the same conceptual system. Such interaction would be impossible if they did not share the same expectations, and had different notions ofspatial location, did not recognize the same objects, etc., within the universe of discourse of the communication which they had with each other. To share such a conceptual scheme is a necessary condition for any communication to take place.

It is possible that the method of communication used is quite different from those which are separately used by the two races and that its universe of discourse would apply solely within those concepts which they had in common. Thus, it might be said to favour neither the conceptual scheme peculiar to the aliens or that which is peculiar to the humans, but to be completely neutral between the two viewpoints. Such a common means of communication could then serve as a neutral standard between the differing ways of seeing or as a base for expeditions, by each group, into what is unfamiliar about the conceptual system of the other. How could such a common standard be used for this purpose? Let us suppose that the means of communication in question is a language whose universe of discourse is the common activity in which the humans and aliens take part. The language may be used in two ways, for the purposes of explaining a conceptual scheme to a being who does not share it. The first would be to express one's beliefs about a certain topic directly in that language, e.g., express how one believed certain objects to behave where the objects were mutually recognized. However, such a method would have severe limitations since the vocabulary of the language would be restricted to those objects and situations which were governed by the common conceptual scheme. A second, more promising method, would be to use situations, which both parties understood, to construct models and analogies which would illustrate one's own system of thought. One obvious difficulty with this could

be that the common language may not be rich enough, or embrace enough concepts, to allow meaningful analogies to be made. It is quite possible that the conceptual scheme which the two races have in common may be extremely narrow in its scope, but this does not mean that this must necessarily be the case where such a contact between beings like this takes place. I can see nothing to count against the possibility that the common language should deal with all and only those concepts which are mutually held and that it should be complex enough to allow for analogies of the required kind.

It should be noted that what the two races have in common is not the neutral observation of the raw data of their world, but a shared conceptual scheme. I have argued that such a conceptual scheme can serve as a standard which favours neither of the different conceptual systems held by the two groups of beings. From this, it follows that our inability to see the world without processing the stimuli which we receive through the commitments to which we hold, does not imply that a neutral standard between conceptual systems cannot exist.

It seems to me that this is enough to suggest that a common standard between conceptual schemes may well exist even though such a standard presupposes its own conceptual scheme. We now need to show what the neutral standard between scientific paradigms could be in a society and culture such as our own, and to demonstrate that such a standard can perfectly well embody the presuppositions of its own

conceptual system. I am indebted to C.A. Hooker[1] for the arguments in support of this, but although they are directed specifically towards P.K. Feyerabend's theories, I wish to apply them to our discussion of Kuhn in the last chapter.

The first point which would seem to have a bearing on the existence of a neutral standard between paradigms is a factual one. Kuhn suggests,[2] that when a change of scientific paradigm occurs, the scientist who has made the transition has come to live in a different world as far as his practice of science is concerned. There is a change in his perception in that he observes things which he did not see before and ceases to perceive what he saw formerly. The results of gestalt experiments suggest how this change can occur, and historical examples make it plausible to suggest that there has been such a switch in vision between paradigms. He does not accept the view that what changes between paradigms is not the objects which the scientist perceives but his interpretation of stable and neutral data which are independent of the imposition of any conceptual system. As we have seen, he argues that such neutral data do not exist, but that the point of view taken by the scientist, determines what the data are. Sensory experience is not fixed and neutral, but it varies, for the scientist, according to the normal scientific tradition which he accepts. Kuhn bases this claim on what he sees as the results of certain psychological experiments[3] which are incompatible with a theory of the mind and of perception which would be needed for a tenable account of

neutral observation. Thus, when a scientist changes to another paradigm, he does not just change his principles of interpreting what he sees in the world, he switches from perceiving one set of data to perceiving another, and the very material which could be the subject of interpretation, itself, changes.

I would now like to examine how this fares in the light of a factual claim, counter to that above. It is reasonable to believe that a change in scientific theories of paradigms is not accompanied by changes in the non-conceptual physical context to which they apply. In other words, although a difference in my conceptual system might make a difference to how I organize the stimuli which I receive, this will make no change in the nature of the stimuli. Also, there is little reason to believe that the structure of man's sensory equipment exhibits significant variation or has changed significantly within historical times. Finally, on scientific grounds, we can claim that the stimulated state of an organism's sensory equipment depends only on the context causally responsible for the stimulation, and the neuro-physiological structure of the sensory equipment. From this, we can conclude that in the same physical conditions the stimulated states of a group of people who held to different paradigms would all be more or less the same.[4] Of course, as Kuhn points out,[5] the stimulation of an organism's sensory equipment does not, by itself, determine what the perceptual experience of the individual is going to be or the beliefs which he will form

as a consequence of this. What a person sees is also a function of his beliefs expectations, desires, training, etc.

All this would lead to the postulation that perception is fundamentally a process of selection, abstraction and transformation in the cortex of which culminates in a conscious judgmental state. To validate Kuhn's claim that what the scientist sees varies with the paradigms which he accepts, we must establish that among those factors which are active in determining the cortical perceptual processing of the incoming physical information, are the scientific paradigms which the percipient accepts. Now, Hooker cites some results of psychological research which suggest that the theoretical beliefs which a percipient might have, do not in fact influence his perceptual processing activity, save for some expectations which are almost totally peripheral to the pursuit of modern science. He demonstrates the plausibility of this by pointing out that although Aristotle, Newton and Einstein all had different theoretical beliefs about what happens at sunset, yet they all had the same experience of a "round golden light in the sky moving closer and closer to the horizon." He believes "it is no accident that no theory has been put forward under which the sun is square or green or observably stationary in the sky. For the fact of the matter is that it is downright impossible to believe that our theories could affect our perceptions of these aspects of the sunset situation whilst ever we remained sane."[6]

Insofar as a paradigm is a system of theoretical beliefs,

this would appear to be a strong counter-claim to the view which Kuhn espouses. We could argue that in fact the scientific paradigm which one holds does not influence the contents of perception in the manner or to the extent which Kuhn suggests. We could agree with him in accepting that an important element of the perceptual process is determined by general beliefs, expectations, etc., but hold that specific theoretical beliefs, such as those of science, have no import- and influence on what the scientist perceives. Thus, we would have a set of data which are stable and neutral with regard to the beliefs embodied in scientific theories. But, as we have seen, Kuhn does not regard paradigms as sets of theoretical beliefs; rather, he thinks that they exist prior to and hence determine what the content of theories is to be.[7] I do not think, however, that this consideration is sufficient to make Kuhn's position irrelevant as far as this argument is concerned. Although a paradigm may underlie the theoretical beliefs which a person holds in the manner which Kuhn describes, this does nothing to alter the fact that such beliefs do not influence his perceptual processing activity. Now it must be the case that a certain specific paradigm or set of them determines those beliefs insofar as it is prior to them. Thus, it could be said that the specific determination of a paradigm, as far as theoretical beliefs are concerned, does not influence one's perceptual processing activity. It would seem from this, therefore, that we can reasonably speak of a core of perceptual experience which, as a

matter of fact, is independent of those scientific paradigms accepted at the time.

Secondly, we can argue for the existence of a conceptual scheme which is free from commitment to any specific scientific theory. We can single out those concepts, the possession of which is a necessary condition for having intelligible perceptual experience. Thus, as Hooker puts it,[8] "at the fundamental level, we have the categorial concepts of space, time, causality, identity, quality and so on." At a more specific level still they include determinates of these determinable properties? If we put all these together, we find that we have a coherent conceptual scheme and that the possession of such a scheme is a necessary condition for intelligible sensory experience.

While there is a reasonable measure of plausibility about this, as presented by Hooker, I am not sure that the nature of the necessity of this conceptual scheme for intelligible sensory experience is as clear as it might be. I think a good case could be made for saying that the possession of some conceptual system is logically necessary for any meaningful perceptual experience, but this leaves the questions of whether this must be some one set of concepts which all must share, or whether there is a variety of such sets, and if those which Hooker lists are all logically necessary for coherent perception. The treatment of these questions would demand the scope of a separate work, and consequently, I cannot answer them here in any kind of detail. Neverthe-

less, I think that the following comments will enable us to come to a reasonable conclusion. The first is that there appear to be at least a few concepts which must be possessed as a logically necessary condition for coherent perception. Thus, for example, any conceptual scheme which recognized objective particulars in its ontology would also have to possess the notions of spatial location and material bodies,[9] and it is arguable that an individual who had no conception of objective particulars could not be said to be a perceiver. Secondly, it is apparent that there is almost complete understanding on a basic and practical level, among the entire human race and perhaps, though to a lesser extent, between humans and animals. (I am not sure in what way it could be suggested that a dog has a conceptual system, but he can come when we call him, eat his food when we give it to him, and find his way about the neighbourhood.) We can, surely conclude from this that as far as the more logically primitive concepts are concerned, there is a certain basic set which is shared by all men. Thirdly, to possess a concept it is necessary to be able to apply it. Thus, if I have the notion of spatial location I must also have the idea of what it is for objects to be in different positions and this in turn implies that I know what it is for things to be in specific positions relative to each other. We see, therefore, how Hooker can build his conceptual system from "categorial concepts", through "determinable concepts" to "determinates of these determinable properties".[10] In the light of these

comments, I think that we are in a position to conclude, on conceptual grounds, that there is a coherent conceptual scheme which is shared by all men, at least in fact if not from logical or metaphysical necessity. We can see that a language, embodying only those concepts, would be free from any specific theoretical commitment, for we have identified the conceptual scheme on logical grounds and with reference to only the most general of human characteristics.

Finally, we can extend the scope of such a neutral, general conceptual scheme in the light of the following factual considerations. We may reasonably suppose that the possession of a concept is closely bound up with the possession of a certain neuro-physical cortical structure and of certain cortical processing techniques. We may also assume that the cortical structure of a person is a function of his environment first and by his socio-cultural environment second. Thirdly, we may reasonably assume "that at least for literate Western man (but surely also for most men whether literate and "Western" or not), the macro-physical and fundamental socio-cultural environments in which they are raised are essentially the same."[11]

From these assumptions, Hooker feels we can conclude that throughout human history, there has been no essential change in the incoming stimuli which are fed to the cortex or the processing of those stimuli in the cortex, and that there is no significant variation among present day men as far as this is concerned. What this means, is that the sense

organs of all humans, provided those organs are not defective, will respond in essentially the same way to any given stimulus. Further, if we can correlate the state of the human cortex with the conceptual scheme which is held, we can conclude that there is essentially one conceptual system, for the processing of stimuli, which is common to all humans. Given this, we are now in a position to assert that fundamental perceptual experience is the same for all men. If this is so, then, at this level, a description of what is perceived will be independent of any specific scientific theories which occur during the historical evolution of science. Consequently, we have a wide context of observation which is neutral between any competing scientific contexts and which may be described in a language which is free from any commitment to any specific theory.

We have shown, so far, that the impossibility of observation without the imposition of a conceptual scheme possessed by the perceiver, is not sufficient to rule out the existence of a level of perception which is neutral between any specific theory. Since different theories require different conceptual schemes for their intelligibility it also follows that the collection of concepts necessary for this neutral observation are independent of those which are peculiar to the theory in question. In the light of this, it was suggested that the uncommitted observation level might serve as a standard against which the characteristics of two different conceptual schemes could be examined. The signifi-

cance of the statements of a theory could be demonstrated, to one who did not accept its underlying conceptual scheme, by translation into the common, neutral language, or by analogies in terms of that language.

The question now arises, however, as to whether the possession of a common, neutral conceptual system, with its attendant language, would be sufficient for the understanding of such analogies and models. For Kuhn, one of the most fundamental elements of belonging to a particular scientific tradition is possessing the ability to see the resemblance of varieties of situations to the various scientific achievements which are regarded, at that time, as supplying the foundations for further practice. Such achievements are referred to, by Kuhn, as exemplars shared by the appropriate scientific community. The ability to recognize and act on such resemblances constitutes the following of the correct procedure within a scientific tradition, and amounts to seeing the world in a certain way. "He (the scientist) views the situations that confront him in the same gestalt as other members of his specialists' group."[12] Only when a student has the ability to see the problems which he is given to solve as like those examples to which he has been given the solutions, is he on the way to becoming a member of the scientific community.

By what criteria, then, does a scientist categorize the situations he encounters as being the same type as the exemplars which he accepts? We have already noted Kuhn's

view that this activity cannot be analyzed in verbal statements. Situations are not recognized as being members of a group because there is some one thing which is common to each of them, nor can the procedure, by which they are seen as members of such a group, be presented as the following of a set of explicit rules and assumptions. The temptation to ask for "the criteria by which particular situations are grouped into similarity sets should be resisted in this case."[13] Instead, the categorization of the situations encountered in scientific activity is to be accounted for in terms of a family resemblance relation which holds between each item in the similarity set. Thus, rather than learning a theory and a set of rules for applying it, the scientist acquires the skill of being able to recognize certain family resemblances to the examples which he has been shown.[14] It follows from this that when a student has been educated in scientific procedures he has not learned a set of explicit rules together with the area of their application, rather he has learned a capacity for placing certain phenomena within certain classifications.

Kuhn refers to such an accomplishment as "tactic knowledge" which is learned by doing science rather than by acquiring rules for doing it.[15] But what sort of account can we give of it? Kuhn is unsure if, indeed, "knowledge" is the correct expression to be used in this case, but he feels that there are reasons for exploring it: "It has been transmitted through education; it has, by trial, been found

more effective than its historical competitors in a group's current environment; and, finally, it is subject to change both through further education and through the discovery of misfits with the environment." But, it is unlike our normal use of a word in that, "we have no direct access to what it is we know, no rules or generalizations with which to express this knowledge."[16]

It appears as if Kuhn considers this knowledge, which underlies our ability to place situations within similarity sets, as being similar in kinds to that which can be explicitly stated in verbal form. I would like to suggest, however, that his result of a scientific training would be more accurately described as a skill. As such, we can express it more expeditiously in terms of "knowing how", rather than "knowing that", according to the distinction which has been made by Gilbert Ryle.[17] Thus, an important part of the scientist's training consists of inculcating the skill of arranging his discoveries in the appropriate resemblance sets. The scientist "knows how" to deal in this way, with the situations he encounters, but this does not entail that he is therefore aware of an explicit set of rules which he must consciously follow in order to demonstrate his ability. Knowing how to do something is not equivalent to knowing that a certain number of propositions are true but it is the acquirement of a disposition, though not a "single-track" disposition like a reflex or a habit.[18]

There are criteria according to which one can judge

whether or not a person possesses a certain skill, but the exercising of his ability is not dependent on his avowing and consciously following a series of rules.[19] Thus, although the scientist may not be in a position to state the criteria according to which he sees certain situations in the light of certain resemblance relations, his colleagues are able to judge his ability to see things in the required way, or, indeed, whether he possesses the necessary skill at all.

If the acquisition of this kind of skill is essential for the membership of a scientific tradition we can see that the debate between successive theories cannot be conducted in terms of a neutral language alone. It will be impossible for me to understand the position of one who has developed a competing theory unless I acquire his ability to see situations as members of the similarity sets to which his theory refers. Thus, I can only grasp the significance of his theoretical assertions when I know how to view things according to the relation in which he sees them. For me, he will never be able to translate his theory into the neutral language, or use it for the construction of models and analogies unless I develop the capacity to recognize the same resemblance relationships with which he works.

Would it be possible for me to attain that ability and yet retain my own way of seeing the world? There may be some cases where the recognition of the new resemblance relation between situations might involve an inability to return to the old. We can think of analogous cases concerned

with other skills. Someone could teach himself to play the organ and develop a technique which was passably successful. But, if he decides to take proper lessons and consequently learns a new technique from his teacher, he may find it impossible, after he has thoroughly assimilated the correct method, to return to that which he had before. I am not so sure, however, of the extent to which this sort of incompatibility could arise between the different similarity sets of competing theories. Each group would still be able to identify its own exemplars and the situations which were regarded as resembling them and, given this, it seems unlikely that to learn how to categorize situations in the manner of the opposing group is to abandon permanently, one's own way of seeing the world.

Underlying the general, neutral, scheme of observation, outlined above, there must be the ability to group situations according to the standards of resemblance demanded for this level of perception. The change from one scientific tradition to another will leave this ability largely untouched, since the new way of seeing involves only a relatively small and specific part of experience. Thus, if I teach myself to group situations in the manner demanded for the significance of my opponent's theory, it would always be possible for me to recall the ability demanded for my own, through cues taken from the neutral observation context. The perusal of the lists of phenomena which my own theory regarded as being of the same kind, should be sufficient to re-establish the ability

which led to such a grouping, and it seems unlikely that an examination of the statements of my own scientific tradition would fail to revive the capabilities necessary for understanding them.

I think we can conclude, then, that we have a conceptual scheme and a level of observation which is not committed to any specific theory. We have also the ability to learn how to see the world according to another system of resemblances without necessarily abandoning our own. It seems, therefore, that we are in a position to understand a scientific tradition without making it our own.

FOOTNOTES

[1] "Empiricism, Perception and Conceptual Change", Canadian Journal of Philosophy, September, 1973.

[2] The Structure of Scientific Revolutions, Chapter 10.

[3] Ibid., p. 126.

[4] Hooker, p. 64.

[5] Ibid., p. 125.

[6] Hooker, p. 66.

[7] Ibid., Chapter 5.

[8] Ibid., p. 68.

[9] See P.F. Strawson, Individuals, Methuen, 1959.

[10] Ibid., p. 68.

[11] Ibid., p. 71.

[12] The Structure of Scientific Revolutions, Postscript, p. 189.

[13] Kuhn, p. 192.

[14] Kuhn, p. 189.

[15] Kuhn, p. 191.

[16] Kuhn, p. 196.

[17] The Concept of Mind, Peregrine Books, 1963, Chapter II.

[18] The Concept of Mind, p. 46.

[19] The Concept of Mind, pp. 44-50.

CHAPTER 4

In Chapter 2 we saw the resemblances between normal scientific traditions and metaphysical systems as defined by Walsh. The nature of the disagreement between two people who differed in their acceptance of scientific paradigms and the disagreement between those who accept different metaphysical systems, is concerned, in both cases, with the failure, by the opposing parties, to share the same underlying rules for the conducting of their respective enterprises. However, as far as the scientific tradition is concerned, the underlying factors which determine the significance of its theoretical assertions cannot be sufficiently accounted for in terms of a set of explicit rules and assumptions. As we have seen, a person must be able to arrange certain situations into the resemblance sets recognized by a specific scientific tradition in order for him to understand the meaning of its theoretical assertions. But, is such an account sufficient to include all the factors which underlie the significance of scientific theoretical assertions?

There are some principles which can be explicitly stated and which seem to capture exactly, certain assumptions and pre-suppositions which underlie both scientific traditions and metaphysical systems. It does indeed seem to be true that we would give our unqualified assent to such state-

ments as "things just don't happen for no reason at all" or "things don't literally vanish without trace", in the way that Walsh suggests.[1] There would also appear to be a great deal of plausibility in the suggestion that it is possible to compile a list of principles which a person is prepared to accept without question. If a person holds to a certain view of things, whether that view is a metaphysical system or that involved in accepting a specific scientific tradition, there is bound to be a number of general statements which, if true, would be incompatible with that whole system or tradition, rather than any limited number of statements within it. Instead, for it to be possible to continue to see things in terms of that metaphysical system or scientific tradition, logically, one must deny that these statements are true. For example, to suggest that some things can happen for no reason at all is to say something which would be incompatible with a rational pursuit of present scientific activities. Thus, there is a sense in which someone who holds to a metaphysical system or scientific tradition would have to accept certain principles without question. Their denial is logically incompatible with the view he has of the world. It is fairly safe, therefore, to assume that every such view of things must entail the acceptance of certain categorial principles.

But the fact that a set of absolute pre-suppositions could be derived from a metaphysical system or scientific tradition does not mean that these are the factors which

determine the meanings of the statements which follow from them. We may be able to discover the statements which a scientist or metaphysician would be committed to believe in without question, but it is another matter to say that it is his acceptance of these which gives his belief structure the distinctive format which it has. Walsh argues,[2] that categorial principles act as rules or principles of interpretation which are applied to experience in order to yield the distinctive systems of particular metaphysical or, as follows from what we have said, scientific traditions. The statements which are not open to question, as far as such a system is concerned, serve to define and guide the procedure of the system. But is it necessary to assent to categorial principles in order to belong to a particular metaphysical or scientific tradition? It would seem that it is not, and indeed, that the factors which ultimately determine the theoretical statements of such traditions cannot include assent to verbal statements at all.

There are two reasons for this. The first is the difficulty in discovering what the categorial presuppositions in any given tradition happen to be. Let us assume that we have explained the theory of absolute pre-suppositions to a member of some metaphysical or scientific tradition. Having done so, we then ask him to list the categorial principles to which he holds. It appears to me that it is only after a good deal of thought that he could produce a list and that there is no guarantee of its being in any way

complete. We do not expect people to be able to enumerate their categorial principles when asked and it is plausible to suggest that many people have not given a moment's thought as to what their absolute presuppositions might be. If this is so, it is very unlikely that the view people have of the world is determined by a set of categorial principles which they explicitly hold. If a scientist, who worked within an identifiable scientific tradition, found himself unable to give a list of absolute pre-suppositions according to which he worked, we would not deny him the right to membership of that tradition, and as we have seen, Kuhn remarks on the fact that it is very difficult to isolate a set of rules and principles which will satisfactorily account for a given scientific tradition.[3] Would the same hold true for a metaphysical system? Much depends on what the system happends to be. Some philosophers have tried to construct a system which depends solely on a certain number of specific principles for its validity. Thus, we have the attempts of Descartes and Spinoza to present a scheme of knowledge which is unquestionably certain. However, if we consider the case of the materialist, who considers that it is out of the question to think that there might be features of experience which could not be satisfactorily accounted for in natural terms, it is open to question as to whether or not he bases his attitude to the world upon his acceptance of that explicit principle.[4] Materialism could, perhaps, be constructed as a series of statements, dependent upon a system

of absolute pre-suppositions, but it seems just as likely that it takes the same form as a scientific tradition. It is quite possible, that one could be a materialist, in Walsh's sense, without being able to formulate the relevant set of categorial principles. It appears to be closer to a scientific tradition than the rather artificial set-up of a metaphysical scheme developed from first principles. Materialism is more like a way of seeing and interpreting the world than the prescription of a rigid scheme of interpretive principles.

Secondly, we have Gilbert Ryle's argument against the view that for the intelligent execution of an operation it must be conducted by the conscious following of some explicit rules and principles.[5] Let us assume that for me to take part in scientific activities, according to a certain tradition, or for me to be a metaphysician of a certain school, it is necessary that I follow certain specific rules and assume certain principles. But, in order for me to work intelligently with those principles it is necessary for me to know how to apply them. To know how to apply them, either I have to be aware of certain explicit principles which I should follow or I have a certain ability to apply them which is quite different from propositional knowledge. If it is necessary that I be aware of the principles, then must I be aware of some further principles in order to know how to apply them? If the answer is affirmative, we are well on the way to generating an infinite regress of principles necessary for the interpretation of principles. Ryle's way

out of this difficulty is the distinction between knowing how and knowing that. Thus, "knowing how to apply maxims cannot be reduced to or derived from, the acceptance of these or any other maxims."[6]

This is sufficient, I think, for us to conclude that categorial principles are not sufficient to account, finally, for the determining factor of the significance of any scientific or metaphysical traditions. If a set of absolute presuppositions is isolated, we still require some further explanation of the criteria according to which they are relevantly applied. If we are to avoid Ryle's regress, we must admit that even the acceptance of categorial principles involves the possession of a certain skill in using them. If this is so, we can reasonably conclude that every scientific or metaphysical tradition is ultimately governed by knowledge how rather than knowledge that.

It would appear from this, that apart from the rather artificial situations mentioned above, the insistence on categorial principles is quite superfluous. From the standpoint of a world view their postulation is unnecessary and requires further explanation in terms of the ability to apply them. As far as science is concerned the postulation of their existence as the determining factor of scientific enquiry is quite implausible, and the same goes for metaphysical systems insofar as they are the approach which is taken towards an understanding of events in the world.

In Chapter 1, we noted that Christian belief seems to

depend on the acceptance of certain absolute pre-suppositions which are not shared by everyone. It seems to me that we are now in a position to clarify this. Whatever it may be, Christian belief does not take the form of a metaphysical system which is rigidly argued from first principles. Instead, it bears more resemblance to a scientific tradition in that it depends on a certain way of seeing certain events. Even if the acceptance of the cosmological relation is to hold a certain absolute presupposition it is still the case that one must know how to apply the principles which one holds. The incommensurable factor, then, between those who accept the statements of Christian theism are meaningful and those who do not, is to be accounted for in terms of not knowing how to see the world in the way that the Christian views it, and, for the Christian, the inability to view things in the manner of the atheist. It would appear, therefore, that the discussion between the theist and the atheist incorporates all the impediments existing between those who hold to different sicentific traditions and that these occur for exactly the same reasons. Thus, any method which would eliminate misunderstanding between those who fail to grasp the significance of each other's theoretical assertions can also be used to dispel that which occurs between the atheist and the Christian.

In the light of the last chapter, we can assume the existence of a level of observation which is neutral between specific commitments to any specific scientific theory. By

the same token, we can conclude its neutrality between theism or atheism. The general conceptual scheme which we sketched must be common to either, as members of the same race, and, as we can safely say for our purposes, culture. Opposing scientific theories are incompatible with each other because they make conflicting statements about the situations which are neutral between them. If this were not so, it is difficult to see how disagreement could ever occur since there would be nothing about which to dispute. Each theory would proceed in its own way without making contact with the other and although incommensurable, they would be quite compatible with each other. In the same way, insofar as the statements of Christian theism conflict with those of atheism, this must be so because they both refer to situations which are neutral between them.

We have seen how the lack of understanding between the two sets of opponents stems from their mutual lack of ability to see the situations which they encounter in the manner which the significance of the opposing theoretical statements demands. Thus, in order for the atheist to understand the meaning of the statements of theism, he must be able to see things according to the manner of the theist who must meet similar requirements if he is to understand his opponent. The same, of course, applies to those who hold to different scientific traditions.

In the last chapter, we looked briefly at the question of whether or not one could learn another way of seeing situa-

tions while, at the same time, retaining his own. It appears to me that is possible. In the first place, the skill required is the ability to see situations as members of certain resemblance sets different from those which underlie one's own theoretical statements. But, fundamentally, these situations are neutral between the theories being discussed, and to learn the world view necessary for the significance of opposing theoretical statements, is to learn to arrange the same items in a different way. To use an analogy, it would be rather like cultivating the ability to group cars according to engine size as well as according to make. But the analogy is crude, as Kuhn has pointed out; it is apparent that some people have more difficulty in learning to see the world in a different way, than they would have in grouping cars according to different criteria.

I am, however, fairly confident that the ability to group situations in more than one way can be achieved, and I think that the following is a fairly satisfactory account of how this can be done. The ability to recognize certain resemblance sets is the ability to place correctly any new situations which appear. Thus, where a breakdown in understanding has occurred a person can discover those situations that his opponent places in similarity sets which seem to him to be like purely arbitrary arrangements. If he studies the situation, he can learn to predict how his opponent would classify new situations. This ability could be attained through the scrutiny of those examples which are regarded

as paradigmatic of the sets and those situations which fall into them, or any of the procedures by which he came to learn how situations are arranged into the sets required by his own theories. It may be the case that some people could develop this additional skill, only at the cost of losing their own but it is arguable that this is attributable to merely psychological characteristics. It is not logically necessary that this should be so. It is plausible to think of a man saying "According to how my opponent sees things he would consider this situation to be in a certain resemblance set which he recognizes and thus he derives the following theoretical statement about it. In my own case, my theoretical statements follow from a different resemblance relation."

If we can learn to see situations according to sets which differ from our own we can put ourselves in the position where we are able to understand what the assertions of an opposing theory are claiming about the situations which are neutral between both theories. It would appear that this provides us with some criteria according to which such theoretical statements are to be judged. Each theorist knows how the statements of the other relate to the neutral level of observation which exists between them, so the difference now involves straight-forward claims about the world as they mutually see it.

In these circumstances, the theory which accounted for a much greater number of the items perceived at the neutral level, in much greater detail, would obviously be superior.

At present a theory which stated the impossibility of manned flight would simply not survive, since this has become an actuality in terms of our neutral observation level. The possibility of situations of which we already are aware in this way, cannot be ruled out by any successful theory. However, what would the criteria for a successful account be? I think that it may be sufficient to answer this in terms of some of Hooker's suggestions.[7]

In rejecting the possibility of a system of observations which is uniquely determined by the stimulation state of one's sensory equipment, we have rejected the possibility of any indubitable foundation for the theory of knowledge. It follows from this, that any claim which we make, including those of the common observation language, is open to criticism and revision. Such criticism will be developed by the theories we construct as well as by other experience. It seems plausible that, at least in principle, the statements of our theories can achieve a role within the common observation level in that they "can enrich and correct and/or displace our simple observational concepts." The facts which form the content of our common level of observation do not come and go with theory but it is arguable that they can be added to through the results of scientific activity. Those facts which remain solely within the reference of the theory, however, will disappear with the theory and the assertions connected with it are only significant in terms of the theory. We can see, therefore, that one criterion for the success of

a theory, over another, is the number of factual statements which it contributes to the common observation language.

We can suggest at least one way in which a theory can contribute to the situations which form the content of our neutral observation. If we hold to a certain set of theoretical beliefs, these will express our expectations of how the world behaves, what kind of events can be encountered and the phenomena we may expect to find. If the experiments inspired by these theories yield the expected results, those results will be in the form of situations which are on the common level of observation but which were unknown before their discovery under the inspiration of the theories. It need not, and indeed will not normally be the case that the situations in question appear in the same form within the neutral language as they would within the theoretical context. If the theory which gave rise to the discovery of the new situations is displaced by another, those situations do not disappear along with it. Rather, they remain within the neutral observation context as some of the phenomena which any new theory must account for, or at least not rule out. The theory held by those who discovered the Leyden jar was that electricity is a fluid and the experiment which led to its discovery as an attempt to collect a quantity of that fluid in a container. The result of the experiment was the discovery of a new phenomenon, open to observation at the neutral level. It is a fact that if a container which has been treated in the necessary way is connected to a certain piece

of apparatus and then disconnected, then for some period afterwards it will administer a shock to the person who touches it. And this fact is independent of any specific theory.

This is enough to suggest that there are at least two criteria for the success of a theory from the context of neutral observation. The first is that the theory in question must not rule out as impossible what we observe to be the case on the common level of observation, but, rather, it must either account for those facts which are independent of any specific theory, or else show some prospect that it will eventually be able to explain them. The second is the ability of a theory to inspire the discovery of phenomena which were previously unknown and which appear as additions to the items of our common level of observation. If the investigations inspired by a certain theory keep adding to the stock of facts within the context of our neutral conceptual scheme, it is more than plausible to suggest that the theory will be more readily accepted than others which do not make such a contribution, or make it to a much lesser extent. If a scientific theory results in an extension of what we perceive at the neutral level, this would suggest that it somehow conforms more closely to the actual condition of the world than other theories which do not achieve this result or fail or achieve it to the same extent.

It would appear, then, that we have achieved two things. First, we have shown that the incommensurability which might

appear between the statements of two opposing theoretical systems can be overcome, that a scientist, or one who accepts a particular world view, can understand a conflicting position without making it his own. Thus, the christian and the atheist can learn to appreciate the significance of each other's positions without becoming committed to their opponent's beliefs. Second, we have shown that there is an extent to which the success of theoretical beliefs depends on conditions at an observation level which is free from any specific theoretical commitment. Insofar as religious statements have situations of the neutral observation context included in their universe of discourse they can be judged according to how they account for those situations and according to the number of new situations which have been produced under the inspiration of the underlying theoretical beliefs.

We have, therefore, some criteria for deciding which of two conflicting theories is to be regarded as superior. But, does this mean that we are now in a position to make a final judgment as to which of two incompatible theories is to be accepted on every occasion when such a case appears? It is clear that we are not. It is conceivable that, at a particular time, there might be very little to choose between two incompatible theories as far as their relationship to our neutral observation level is concerned. Perhaps neither of them appear to deny the possibility of situations which we observe to be the case, or else they present an equal measure of difficulty when we attempt to resolve either theory

with what we see to be the case at the theoretically uncommitted level. Similarly, it is quite possible that we may be unable to judge the relative merits of theories using the number of new discoveries which they have inspired as a criterion. It may be the case that none of the theories has been responsible for any new discoveries which add to the list of situations observed at a level which is uncommitted to any specific theory. The conflicting theories could each claim the credit for a number of discoveries in such a way that none of them can be declared victorious at the expense of the others. It follows from this, then, that there is only a limited number of cases where one theory can be said to account for the situations in the neutral context and can be shown to have added to those situations to an extent which none of its rivals can match. (The ability to account for whatever success its rivals had enjoyed would serve to consolidate its position still further.)

Can the claims of Christian Theism be firmly established or refuted according to these criteria? Unfortunately, this would not seem to be so. Given that an atheist may enter into the world view which is necessary for an understanding and an appreciation of the position of the Christian theist, this does not mean that he has a basis for conclusively accepting or rejecting that position. The Christian way of viewing the world and the beliefs which depend on it, both concern and refer to the set of situations which are neutral between Christian theism and atheism. But this is not to say

that either theistic or atheistic beliefs give a better account of those situations or that one belief system has been more successful in inspiring the discovery of previously unexpected phenomena at the neutral level when it is compared with the other. On the contrary, while theistic beliefs concern situations at a neutral level, it would appear that the amount of support which such situations supply is no greater than that to be mustered for non-theistic belief systems.

In illustration of this, we will briefly examine some religious beliefs over which the theist and the atheist would disagree.

Many theists would hold that the existence of the world stands in need of some explanation in terms of something other than itself and a great deal of their basis for a belief in God stems from this conviction. On the other hand, many atheists are content to think that the world just is. They can see no reason to look for some further explanation. In the light of what I have argued above, it is plausible to suggest that each party could come to grasp the significance of the other's convictions concerning this issue. But, how could one establish the propriety of these ways of seeing the world according to the criteria supplied by the neutral level of observation? It is difficult to see how either view could inspire the discovery of any new phenomena which the other could not inspire to an equal degree, or for which the other could not account.

Again, consider a theist who believes in the occurrence

of divine intervention in the world and who cites certain events as evidence for that belief. There are two ways in which such evidence may be questioned. The first is from the point of view of a person who is in basic agreement with him but who sees the evidence as ambigious in that it is open to alternative interpretation. The second is from the point of view of an atheist who rejects the concept of the miraculous and the entire conceptual scheme associated with it. It seems to me that there are few, if any, examples of miracles which are at present accessible to any observer and which are generally recognized as miracles by those who claim to believe in their possibility. Thus, not only must the atheist come to understand the significance of the theist's claims, he must also contend with the ambiguity of the evidence presented under the theist's own terms. The result of this would seem to be that there are no criteria which will clearly establish the propriety of either the world view which accepts the possibility of miracles or that which rejects the whole concept.

We have not, therefore, established a method guaranteed to settle the dispute between the Christian and the non-theist, but I think we have shown that it is possible for each of them to have a significant understanding of the other's position. It could be argued that the difficulty involved in the resolution of religious disagreement results from the ambiguity of the evidence in itself, rather than a failure of the parties to understand or appreciate the world

view of those who differ from them. There is therefore the prospect that although, at present, the neutral context happens to supply no clear basis for deciding between theism and a non-theistic world view, it is conceivable that this may be provided in the future. Thus, we can point to the possibility, or perhaps even to the prospect, that the situation may arise when the relative merits of theistic and non-theistic claims can be more satisfactorily assessed.

FOOTNOTES

[1] Metaphysics, pp. 155-156.

[2] Metaphysics, p. 169.

[3] The Structure of Scientific Revolutions, Chapter 5.

[4] Metaphysics, pp. 162-3.

[5] The Concept of Mind, p. 31.

[6] The Concept of Mind, p. 32.

[7] "Empiricism, Perception, and Conceptual Change", p. 72.

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